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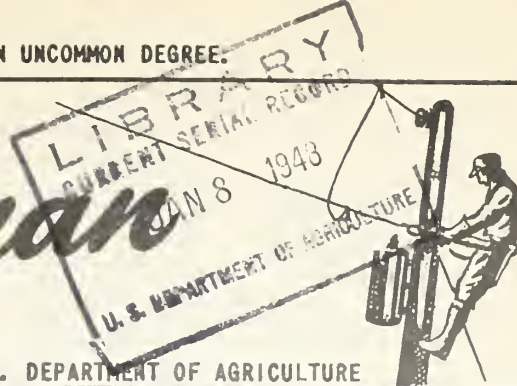
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# the Lineman

RURAL ELECTRIFICATION ADMINISTRATION - U. S. DEPARTMENT OF AGRICULTURE



## Fifth Conference Called "Best of All"

### FIRST OKLAHOMA MANUAL AVAILABLE

Last summer a group of State job training and safety supervisors met at Oklahoma A and M College to work out the outlines for four informational manuals needed in REA training. The first of the four books, entitled 'Mathematics applied to Rural Electric Line Construction Operation and Maintenance', is now available. It sells for \$1.00 per copy and may be obtained from The College Book Store, Oklahoma A and M College, Stillwater, Okla.

This is the foundation text of the series. The three other books are: 'Mechanics Applied to Rural Electric Line Construction, Operation and Maintenance', 'The Principles of Electricity', and 'Rural Electric Systems', which will be produced in that order. It is hoped that they will be available by spring.

The first book offers a systematic, step-by-step review of the arithmetic, algebra, and geometry a lineman needs to solve metering, transformer, and other electrical problems. It is written in lineman's language and so simply explained that a high school education is not absolutely essential to understand it.

This series of publications is being compiled by W. Fred Heisler, Training Consultant, Oklahoma A and M College, under the direction of Glenn Smith, Head, Department of Trade and Industrial Education, Oklahoma A and M College, and E. P. Chandler, State Supervisor, Trade and Industrial Education, Oklahoma.

A Complete List of Resolutions  
Adopted at the Conference  
Will Be Published in the Next  
Issue of The Lineman

### LARGE CROWD ATTENDS

The fifth annual Job Training and Safety Conference, held in Washington D. C., the week of November 17, 1947, attracted one hundred and eighteen persons from all parts of the United States and was termed the most successful conference of the entire series.

Feature of the first day's program was an address of welcome by REA Administrator Claude R. Wickard. Other welcoming talks were given by Assistant Commissioner R. W. Gregory and W. H. Cooper, Chief, Trade and Industrial Education Service, both of the U. S. Office of Education; and Frank A. Dawes, Chief of REA's Management Division.

The entire five days were devoted to talks, round table discussions, and demonstrations designed to assist State job training and safety supervisors, line foremen and managers to do their safety and training job more efficiently.

B. E. Harris, Associate Supervisor of Trade and Industrial Education, University of Alabama, stressed the importance of creating more interest in job training. Mr. Harris' humorous talk set the stage for M. L. Powers, Assistant Supervisor of Trade and Industrial Education, Oklahoma A and M College. Mr. Powers presented a practical approach to safety through job training. The plan which he presented provided eight hours per day, five days per week training, and that there are just two kinds - 'organized and accidental.

The development and use of REA instructional material was discussed by a panel consisting of E. P. Chandler, State Supervisor, Trade and Industrial Education, Oklahoma; Dr. D. W. Aiken, Teacher Trainer, Mississippi State College; D. B. Bidle, Illinois Job Training Supervisor; W. A. Seely, State Supervisor, Trade and Industrial Education, Tennessee; and W. C. Brown, Assistant Supervisor, Trade and Industrial Education, Mis-

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## THE EVIL THAT MEN DO LIVES AFTER THEM

This famous line might well have been directed to a certain rural electric cooperative foreman. So it was decided, when the background of an accident reported to Employers Mutuals was investigated.

This foreman had rock-ribbed opinions -- all of which were wrong -- on established safety practices. He absolutely refused to wear rubber gloves unless he was actually going to touch energized primary conductors, which he did on numerous occasions. Many other precautions were disregarded in about the same manner. As if this weren't enough, he talked loud, long and scornfully about safety rules in general, and about how he would 'just like to see someone make me follow any of them, unless I wanted to!'

## Foreman Goes to New Job

The foreman passed on to another job (only a miracle kept him from passing on to another world) and the cooperative attempted to carry on with three inexperienced men who had been under him. A construction job came up and the State REA Safety and Job Training Supervisor was asked how to handle it safely. He advised them to kill the main line before attempting to install the new take-off. This they did, and the extension was successfully completed.

A few days later the manager directed them to energize the extension and set meters for the places that were wired. When they arrived at the take-off pole they discovered that they had forgotten to bring a hot-stick. As their warehouse was many miles away, they decided to connect the primary jumper by hand, wearing rubber gloves ..... because they had seen their previous foreman do it that way.

## Takes a Chance, Luck Fails

One man climbed the pole and belted off above the neutral. With rubber gloves on, he connected and energized the new extension without getting hurt. It was only after he had completed the job and prepared to descend that his luck ran out. As he leaned forward to unfasten his safety belt, his shoulder came in contact with the energized conductor. His injuries weren't fatal, but they were the next thing to it.

The foreman involved in this case could be considered nearly as guilty as though he had pushed the victim into the energized conductor. By his attitude and actions, he had set a dangerous example that would exist long after he had left the scene. Instead of fighting to

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souri. The discussion revealed that the electrical industry has produced very little suitable material for instructional purposes up to the present time. Views were expressed as to the type of material needed in rural line work and the means of getting it produced.

John E. TePoorten, Wisconsin Coordinator of Education, gave an unusually good talk on public relations. He stressed their importance in job training and safety and in the over-all operation of the rural cooperative.

E. L. Williams, Teacher Trainer, Texas A and M College, discussed job analysis procedures. He has done an outstanding job with them in the Texas REA program.

A. E. Becker, Manager, Menard Electric Cooperative, Petersburg, Ill., spoke on the value of employee training to management. Mr. Becker is well qualified to handle this subject, since the present REA Job Training and Safety Program developed from the small beginning he made on that cooperative in 1939. He stated that the program, grown far beyond early expectations, will pay dividends in reduced operating expenses, minimized human suffering, and lowered loss of employee earning power.

Dr. C. J. Potthoff, National Director of First Aid and Associate Medical Director of the American Red Cross, gave a very interesting address on 'Recent Developments in Red Cross First Aid.' The application of a traction splint was demonstrated at the request of a member of the audience.

E. M. Jasper, Staff Representative of the National Safety Council, discussed material available from the National Safety Council.

A special instructor training course was conducted each afternoon by W. A. Ross, Consultant, Public Service Occupations, U. S. Office of Education. This course was widely attended.

Robert M. Reese, State Supervisor, Trade and Industrial Education, Ohio, summarized the conference at the last meeting. He told how several job training and safety supervisors became interested in their present jobs and how they have succeeded.

The first and second annual conferences were planned and staged by REA. Since 1944, responsibility for conference arrangements gradually have been assumed by State supervisors. The 1947 conference was planned by a committee appointed by last year's conference. This group consisted of D. B. Bidle, Chairman, Ill., C. A. High, Ohio, C. G. Alexander, Tenn. and O. D. Heath, Va. The committee received the cooperation of REA and the U. S. Office of Education.

Conference planners were gratified to note the high degree of enthusiasm shown in this year's gathering. Largest single group of foremen came from the Lower Colorado River Electric Cooperative at Giddings, Tex.

# Victims of High Voltage Can Be Saved

## Second In A Series Of Three Articles

IT MAY HAVE BEEN surprising to many of our readers last month to learn that eight one-thousandths of an ampere of electrical current can be dangerous even when 'only 120 volts' of 60-cycle current is involved. It may also have been surprising to find that more victims rendered unconscious by higher voltage electric shock can be resuscitated than victims of low voltage electric shock. The victim unconscious from low voltage shock is more liable to be unconscious with ventricular fibrillation (a heart condition that has no known remedy) than the high voltage electric shock victim. This assumes, of course, that elapsed time before artificial resuscitation is started and other factors are equal. As the voltage increases, the amperes which will flow, even with a high skin resistance, is well above the 100 to 200 milliamperes range which is most likely to cause ventricular fibrillation. It is believed that current values above 200 milliamperes (1/5 of an ampere) cause such violent contractions of the chest muscles that the heart is held tight and actually is stopped from beating for the duration of the shock. Once the contact is broken the muscles relax and the heart usually continues to beat normally.

Since high voltage electric shock in most cases does not cause ventricular fibrillation, the danger of that dreaded condition is least of the factors which may cause death. Death from high voltage electric shock usually results from: (1) paralysis of the nerve center controlling breathing, (2) heavy currents destroying some vital organ, blood vessel, etc., (3) heating the entire body or some vital organ to a temperature above the critical point, beyond which no human can live, (4) ventricu-

lar fibrillation -- this cannot be ruled out completely in high voltage electric shock. If skin resistance is high, and the resistance of the pole or other object completing the circuit to ground is also high, it would be possible with 7,250 volts to obtain a current flow within the range of 100 to 200 milliamperes. This is the value considered most favorable to producing ventricular fibrillation.

Using Ohms Law, let us work out a few high-voltage shock problems. Problem one: A lineman contacts 7250 jumper with his left hand. His right hand is on the guy wire. The contact is momentary, his hands are dry. The resulting arcs puncture the skin and eliminate skin resistance. So all we are concerned with is the internal resistance of the body. If the internal resistance of the body from hand to foot is 400 to 600 Ohms, hand to hand resistance should not be more, so we will assume a resistance of 500 Ohms. Voltage divided by the resistance gives the current which will flow. 7250 divided by 500 equal 14.5 amperes.

What does this mean in terms of watts (power)? Watts equal amperes times the voltage - 14.5 x 7250 equals 104 KW. Compare this to the toaster that makes your morning toast. It is probably 600 watts or six-tenths of one KW. Is it any wonder that if contact is not broken the victim may begin to smoke all over?

We have a picture in our files of a glove resting on top of a transformer bushing. Inside the glove is a man's hand burned off at the wrist. Contact was broken when the wrist burned off. Does the above example give a better understanding of what happens or what can happen in electric shock cases?

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### Employee Accidents Reported for August and September 1947

#### August

	Electric Shock	Pole Handling & Unloading	Tree and Clearing	Hooks Cut Out	Car Truck	Other
No Lost Time	0	3	7	2	4	25
Disabling	3	7	7	2	3	20
Fatal	6	1	0	0	0	0

#### September

	Electric Shock	Pole Handling & Unloading	Tree and Clearing	Hooks Cut Out	Car Truck	Other
No Lost Time	0	4	7	4	2	13
Disabling	4	3	4	0	1	19
Fatal	1	1	0	0	0	0



# The Lineman Tours The States

Wisconsin's foremen's conference, with Herman Potthast presiding, was to be held in Madison on December 9 and 10.

James L. Counts, South Carolina Job Training and Safety Instructor, led a foremen's conference in Columbia, November 13 and 14.

Chester High, Ohio Job Training and Safety Supervisor, will conduct an electric meter school at Ohio State University, December 15, 16, and 17. Mark Hawkins, Licking Rural Electric Cooperative, will be chief instructor. His assistants are: C. D. Dunlap, C. W. Hill, Carl R. Jenny, Kenneth Kinsler, and Howard Rickenbaugh.

The Kentucky managers and directors discussed a revision in their Job Training and Safety Program at the Louisville meeting October 20. J. K. Smith, Chairman of the Advisory Committee, and Thomas Hankins, Vocational Director of the University of Kentucky, have formulated the program outline.



SUBMITTED BY A LINEMAN OF JAY COUNTY REMC  
PORTLAND, INDIANA

## Letters To The Lineman

Mr. Ralph A. C. Hill  
Editor of The Lineman

Dear Mr. Hill:

I have just been reading the November issue of The Lineman and want to congratulate you on this excellent and worthwhile number.

As you know, we in the safety services of the American Red Cross have worked closely with you people in the Rural Electrification Administration since its beginning in many of your projects. This association has always been uncommonly fine and we certainly wish you well. . . .

Sincerely Yours,

Richard W. Thrush  
Deputy Administrator  
First Aid, Water Safety  
and Accident Prevention  
American National Red Cross

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stamp out careless tendencies, he had done all in his power to foster their growth. A foreman could find no better reminder of the tremendous responsibility that is his in being a proper influence and setting a proper example.

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If the contact is momentary the victim has a chance to survive. If continued too long, heating, burns, etc., lessen the chance of survival. Try this experiment - plug in your toaster and quickly pull out the plug - feel the toaster wires. They do not feel hot, yet the full current has passed through them. In other words time is required for the current to produce its maximum heating effect. Duration of the electrical shock period also plays an important part in both low and high voltage electric shock.

This discussion will be concluded in the January issue of the LINEMAN.